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AUTHOR	Walmsley, Sean A.; Mosenthal, Peter
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ABSTRACT

Eighth grade students, in response to a pictorial stimulus (either an intact picture, or a series), were instructed to write either a story (which would be enjoyable for another eighth grader) or a description (which would help another eighth grader visualize the picture). Thirty responses from each of the four task conditions were then analyzed. For the inductive or holistic analysis, raters assigned the stories to the top, middle, or bottom third of a scale, based upon specified (primary trait) criteria. The second method of inductive analysis determined the syntactic complexity of the stories, based upon: (1) length of T-units--minimal units capable of being punctuated as a sentence; (2) length of dependent clauses; (3) number of dependent clauses per T-unit; and (4) length--number of T-units. Responses were also classified, deductively, as poetic or transactional; further judgments regarding story quality and grammar made according to this classification. Regression analyses revealed that the variables contributing to the primary trait (holistic) rating were different for each of the task conditions. Except for the primary trait rating, the evaluation variables were not found to relate to one another in any consistent manner. (GDC)

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PSYCHOLINGUISTIC BASES FOR HOLISTIC JUDGEMENTS OF CHILDREN'S WRITTEN DISCOURSE

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Sean A. Walmsley
Department of Reading
The University at Albany

Peter Mosenthal
Center for Reading and Language Studies
The University at Albany

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There are two principal ways in which one might define a good piece of writing. The first procedure is inductive, and includes holistic approaches (cf. Cooper, 1977; Diederich, 1974), primary trait analysis (cf. Lloyd-Jones, 1977) and T-Unit analysis (Hunt, 1965). In a holistic approach one first collects written protocols, then identifies those variables which appear to distinguish better written protocols from poorer ones. Frequently little attention is paid to the purpose of the task or the audience for whom it is written; primary trait analysis, however, identifies variables related to the stimulus and the task used for eliciting the written protocol (Lloyd-Jones, 1977), in addition to being sensitive to variables present in the protocols being analyzed. In T-Unit analysis, arbitrary syntactic measures are devised and calculated. These measures are arbitrary in the sense that they do not represent the bridge between theoretically testable statements and empirical outcomes (cf. Hempel, 1965). "Mature" writing is thus defined in such terms as mean length of T-unit, etc.

On the other hand, one might define a good piece of writing on the basis of some psychologically validated grammar, such as paragraph grammar (Frederiksen, 1975; Kintsch, 1975; Meyer, 1975) or a story grammar (Mandler & Johnson, 1977; Stein & Glenn, 1979; Thorndyke, 1977). Paragraph grammars have typically defined "good" paragraphs in terms of theme structure and cohesion. Para-

graphs which have an identifiable theme and hierarchical theme structure are assumed to be better paragraphs--relative to operational recall criteria--than paragraphs having little if any theme structure (Kieras, 1978; Kintsch, 1974; McKoon, 1977). In addition, paragraphs which develop few topics, or arguments, are assumed to be more cohesive than paragraphs which develop many (Kintsch, Kozminsky, Streby, McKoon & Keenan, 1975).

In contrast, story grammars have defined "good" stories as those in which a protagonist has an identifiable motive or goal, a plan for carrying out or reaching this goal, and experiences some consequence as a result of attempting to realize the goal. Episodes which correspond to these events are defined as the "necessary components" of a "good" story. In addition, story grammars have defined good stories as those whose episodic sequence develops logically, given the sequence of events that a protagonist undergoes some displacement, identifies some goal, pursues that goal, either achieves or fails to achieve it, experiences some general reaction to this achievement (or non-achievement) afterwards (cf. Stein & Glenn, 1979). This optimal sequence is described by story grammars in terms of rewrite rules delineating optimal epis de sequences.

Paragraph and story grammarians have attempted to validate their grammars psychologically by demonstrating that structures conforming to their grammars are better recalled than text structures not conforming to their grammars. In addition, they have demonstrated that if text order does not conform to the optimal order, readers will tend to reorganize the text so that it does in fact conform to the grammar's predicted optimal order.

The basic difference between inductive measures and aprioristic, or psycho-

logically validated measures is that the former procedure fails to devise operational criteria so that competing explanations or theories can be tested. On the other hand, measures of "good" writing which have been aprioristically defined do, in fact, enable one to test competing hypotheses, or theories (cf. Bever, Fodor & Garrett, 1974). Because writing researchers for the most part have not yet adopted aprioristic measures for defining optimal writing, they have yet to construct psychologically valid grammars that have predictive validity in describing the writing process.

However, while aprioristic measures tend to have predictive and theory-testing validity, they are all too often limited to describing a particular type of text, e.g. folk tales, or speculative paragraphs. Inductive measures are useful in the sense that they tend to be more content sensitive and/or can be applied to a variety of discourse types.

Given, then, that both approaches have their usefulness, a significant question is, what is the relationship between the variables identified by text grammars and those identified by inductive procedures? Will variables assumed to have psycholigical validity bear any relationship to variables assumed to have intuitively derived validity? Of course, the optimal measure of "good" writing would be one which combined the predictive, theory-testing validity of text grammars and the content sensitivity, ease of scoring, and universality of application of the inductive measures.

The purpose of the present study was to address the question, will variables assumed to have psychological validity (i.e. those derived from text grammars) bear any relationship to variables assumed to have intuitively derived validity (i.e. those derived from primary trait and T-Unit analysis)? To examine this question, a writing task was devised and administered to a sample

of eighth grade students such that the stimulus and the written protocols could be defined and described using both intuitive and deductive procedures.

METHOD

Subjects.

The sample consisted of 240 subjects, drawn from an entire eighth grade in two suburban junior high schools in the same school district outside Albany, New York. Sixty subjects were assigned to each Picture x Task condition.

Materials.

Materials consisted of two picture stimuli (Intact, Serial), with two instructions (Story, Description). The rationale and the design of the stimuli are explained in Mosenthal & Walmsley (1979).

Procedure.

Each subject was given either the Intact or the Serial picture stimulus, with instructions to write either a story or a description. The 'audience' was held constant across all stimulus conditions. The Story instructions were as follows:

> We are putting together a collection of writings for an eighth grade class just like yours. Write the best story you can about this picture, one that an 8th grader would enjoy reading in a collection of stories.

Description instructions contained the same first sentence, but continued as follows:

> Describe what you see in the pocture so that an 8th grader in another

classroom can imagine what the picture looks like.

Subjects were tested in groups, and given a regular class period (50 mins) in which to complete the task. Any protocols not completed within the 50 minutes were so marked and were excluded from the analysis. Thirty protocols were randomly selected from each Picture x Task condition; these were used in the analysis presented here. Others were used for training and practice by the raters.

Scoring.

Protocols were initially scored using a primary trait analysis (cf. Lloyd-Jones, 1977), devised by Lee Odell. Fifteen raters, trained by Lee Odell, rated the 120 protocols on four separate occasions, each occasion exclusively devoted to the rating of 30 protocols from each condition. Raters were trained on those protocols which were not selected for the study. Primary Traits were devised for each of the four Picture x Task conditions as follows:

In the first condition (Intact Picture, Story Instructions), the primary traits were identified as (1) Climactic Incident--reference to the man's specific actions, indicating that they were prompted by the mouse; (2) Introduction/Context- reference to information that helped account for the character's reaction; (3) Conclusion--reference to several actions subsequent to the Climactic Incident without huge gaps in the sequence. Raters were instructed to place a paper in the top third (7-9 points) if at least two of the three traits were rated high; in the middle third (4-6 points) if only one of the three traits were rated high, or if all three were rated mid; and in the lowest (1-3 points) if only one trait was rated mid, and

the rest low. To decide whether a paper was at the top of its third, raters were told to favor stories that (a) made use of some incongruity or paradox, and (b) avoided fairy tale fantasy.

In the second condition (Serial Picture, Description Instructions), the primary traits were as follows: (1) Climactic Incident--reference to the man's actions that suggest alarm/distress, but not necessarily attributed to the mouse; (2) Introduction/Context--reference to the setting, the man, and/or to the man's actions prior to the CI, but not necessarily foreshadowing it; (3) Conclusion--reference to several actions subsequent to the CI, without huge gaps in the sequence; (4) Feelings/Personality/Motivation--references to these demonstrated through the man's actions; (5) Items in the picture--reference to most of the items in the picture, and suggesting atypical relationships among them; (6) Arrangement of items in the picture--reference to the fact that items are not in a customary arrangement. Raters were instructed to score a paper in the top third (7-9) if at least 4 of the 6 traits were rated high; in the middle third (4-6) if at least 2 of the traits were rated high, and no more than 2 were rated low; in the bottom third (1-3) if 3 or more of the traits were rated low. Placement within a "third" was determined on the basis of the actual numbers of traits rated high, middle or low.

In the third condition (Intact Picture, Description Instructions), the primary traits were as follows: (1) Man's alarm/distress--specific reference to his alarm, caused by the mouse; (2) Man's physical characteristics--reference to 2 or more of them; (3) Items in picture--reference

to at least 5 items; (4) Relation of items--reference to location of items in relation to each other; (5) Physical attributes of items--reference to a physical feature of at least 2 items. Papers were rated in the top third (7-9) if at least 4 out of the 5 traits were rated high; in the middle third (4-6) if at least 3 out of the 5 were rated high; in the lowest third (1-3) if no more than 1 out of the 5 were rated high. Positions within "thirds" were determined on the basis of the overall number of traits scored high, middle, or low.

In the fourth condition (Serial Picture, Description Instructions), the primary traits were as follows: (1) The number of items shown in the picture that were mentioned by the student; (2) The number of references to specific visual features of these items--i.e. features visible in the picture. Papers were placed in the top third (7-9) if they contained references to 8 or more items, cited 9 or more visual features, and cited 2 or more visual features for each of two different items; in the middle third (4-6) if they contained references to 8 or more items, cited between 3-8 visual features, or cited between 5-6 items but mentioned 3 or more visual features for each item; and in the lowest third (1-3) if they mentioned 7 or fewer items, and at most a total of 3-4 visual features. Placement within the "thirds" was made by reference to the specific combinations of numbers of items, overall and per-item visual features.

The second analysis of the protocols was to determine their syntactic complexity, at the sentence level. Three measures, derived from the work of Hunt (1965), O'Donnell, Griffin & Norris (1967) and others were used: (1) Mean length of T-Units; (2) Mean length of dependent clauses, and (3) Mean number of dependent clauses per T-Unit. A T-Unit was defined as the minimal unit grammatically capable of being punctuated as a sentence (Hunt, 1965), comprising

a main clause with all subordinate clauses attached to it. A fourth measure, Length, was devised, being the number of T-Units in the written sample.

Protocols were then classified according to whether they were Poetic or Transactional (as defined by Britton, et. al., 1975). If a protocol was classified as Poetic, it was next examined to determine if it conformed to the structure of a good story (as defined by Stein & Glenn, 1979), and whether it had the necessary components to qualify as a good story. If it was Transactional, it was analyzed to determine if its T-Units were primarily Records/Reports, or if they were Speculative, and to what extent they were cohesive (as defined by a Cohesion Index, based on Kintsch's definition of cohesion). The rationale and scoring procedures for these classifications are presented in Mosenthal & Walmsley (1979).

RESULTS

The question asked in this paper is, what is the relationship between inductive rating systems, such as Primary Trait analysis and T-Unit analysis, and deductive systems such as paragraph and story grammars? One might predict, on the basis of the four primary trait scoring guides presented above, the following:

(1) None of the 'syntactic maturity' measures (i.e. Length in T-Units, Mean length of T-Units, Mean length of dependent clauses, Mean number of clauses per T-Unit), although they may generally be associated with 'mature' writing, and therefore greater in protocols rated higher, should be specifically related to the primary trait scores in this study. Consequently, one would predict that they would not weigh significantly as predictors of primary trait

scores, and particularly would not vary across the four stimulus conditions.

(2) In the Intact Picture, Story Task and in the Serial Picture, Story Task conditions, one should expect that high scores in the Poetic, Necessary Components and Good Story Order categories would contribute to high primary trait scores. Since greater emphasis is placed on these aspects in the Intact Picture condition than in the Serial Picture condition, one should expect a greater contribution in the Intact Picture condition.

(3) In the Intact Picture, Description Task and the Serial Picture, Description Task conditions, one should expect that high scores in the Transactional, Record/Report, Speculative and Cohesion Index categories would contribute to high Primary trait scores. However, since the primary trait guide for the Serial Picture, Description Task emphasizes the number of items and their visual features, one would predict that a high score in the Record/Report category would be a significant contributor to a high primary trait score for protocols in that group.

To examine relationships between inductive and deductive approaches, protocols in each stimulus condition were scored according to the criteria presented above. The means and standard deviations for each of the variables are presented in Table 1, and the correlation matrices for the variables are presented in Table 2. From the correlation matrices, it can be seen that two

----------Insert Tables 1 & 2 about here----------

major patterns emerge: (1) variables correlated with one another irrespective of picture x task conditions, and (2) variables correlated with one another as a function of picture x task conditions.

For example, within the T-Unit variables, the number of T-Units in a pro-

tocol was negatively correlated with the mean length of T-Units; thus, the greater the length of the sample, the shorter each T-Unit became. The mean length of T-Units was also consistently negatively correlated with the mean number of clauses per T-Unit. Within the deductive variables, Transactional variables were consistently correlated with one another, as were Poetic variables; the two sets, of course, consistently negatively correlated with one another. However, there were no consistent correlations between the inductive and the deductive variables.

Within the four stimulus conditions, some inter-group correlations emerge. In the Intact Picture, Story Task condition, the Primary Trait score was correlated, albeit not strongly, with the average number of words per clause. In the Intact Picture, Description Task condition, Primary Trait scores were positively correlated with the number of T-Units (i.e. length of sample), and negatively with Good Story Order. Mean length of T-Units and the Mean length of clauses were also negatively correlated with Good Story Order. In the Serial Picture, Story Task condition, the Number of T-Units was positively correlated with the Primary Trait score and the Necssary Components score, but negatively with the two Transactional variables, Record/Report and Cohesion Index. Mean length of T-Units was negatively correlated with Necessary Components, while Mean number of clauses per T-Unit was positively correlated with Necessary Components (this was consistent with Mean Length of T-Units being negatively correlated with Mean Number of clauses per T-Unit, and Mean Number of clauses per T-Unit being positively correlated with the Number of T-Units).

In sum, most of the correlations, across all stimulus conditions, were within the inductive and deductive sets of variables. Correlations across the

the inductive and deductive sets essentially comprise positive correlations between Primary Trait scores and T-Unit variables (# of T-Units, Mean Length of Clauses, Mean Number of clauses per T-Unit); and mixed positive and negative correlations between T-Unit variables and the Transactional and Poetic variables (# of T-Units, Mean Clauses per T-Unit being positively correlated with Poetic; Mean Length of T-Unit, Mean Length of Clauses being negatively correlated with Poetic).

To determine the contribution of T-Unit variable scores and those derived from the Deductive approach (i.e. paragraph and story grammars), an analytic technique that integrates factor analysis with multiple regression analysis (Pruzek, Walker, Frederick, Huba & Sherry, 1976) was performed. The technique uses the results of a factor analysis to weight the regression co-efficients. First, a common factor analysis was performed for each of the four sets of data. It was determined that 4 factors accounted for the greatest percentage of the variance in each condition. Then, standardized regression coefficients were computed to determine the contribution of any set of variables to any given variable score. The Rotated Factor Matrices and the Standardized Regression co-efficients are presented in Table 3.

-------Insert Table 3 about here----------

The first question raised by this study was, what is the relationship between inductive (i.e. Primary Trait, T-Unit analysis) and deductive (Paragraph, Story Grammar) rating systems? From the factor analysis, it would appear that the inductive and deductive approaches represent distinctly different clusters--

for example, there appears to be a Transactional Factor (repesented by Factor I), a Poetic Factor (Factor IV), and two syntactic factors (# of T-Units, Mean Number of Clauses per T-Unit represented by Factor II; Mean length of T-Unit and Mean Length of Claues represented by Factor III). Primary Trait appears not to be a factor independent of the others, being twice associated with Factor II, twice with Factor III, and once each with Factor I and Factor IV.

The second question was, what predictive strength do any of the variables within the T-Unit analysis, and within the Paragraph and Story grammars have on the Primary Trait scores? From Table 3, the following results are shown:

(1) Although none of the syntactic maturity variables were predicted to contribute to the Primary Trait scores, each of them did. The Number of T-Units contributed to Primary Trait scores in all but the Intact Picture, Story Task condition; the Mean Length of T-Unit contributed only to the Primary Trait score in the Intact Picture, Story Task condition. The Mean Length of Clauses and the Mean Number of Clauses per T-Unit contributed to Primary Trait scores for all but the Serial Picture, Story Task.

(2) Poetic variables (Poetic, Necessary Components, Good Story Order) were predicted to contribute to the Primary Trait scores in the two Story Task conditions, with a greater contribution in the Intact vs Serial Picture condition. This prediction did not hold up--the regression coefficients for Poetic, Necessary Components and Good Story Order were .078, .131 and -.018 for the Intact Picture, and .127, .230 and -.014 for the Serial Picture.

(3) Transactional variables (Record/Report, Speculative, Cohesion Index) were predicted to contribute to the Primary Trait scores in the Description Task conditions, with a greater contribution in the Serial vs Intact Picture condition.

This prediction was partially correct, in that regression coefficients were greater in the Serial than Intact Picture conditions (Record/Report = .205 vs .007; Cohesion Index= .052 vs -.146) but with the exception of the Record/Report in the Serial condition, their overall contribution was slight.

It would appear from the regression analysis that what contributes most to the Primary Trait scores for each of the conditions is as follows:

Condition	Variables contributing (in order of weight)
Intact, Story	Mean Length of Clauses, Cohesion Index, Mean Number of Clauses per T-Unit, Necessary Components.
Intact, Description	Number of T-Units, Poor Story Order, Mean Number of Clauses per T-Unit, Necessary Components.
Serial, Story	Necessary Components, Number of T-Units, Poetic.
Serial, Description	Mean Number of Clauses per T-Unit, Number of T-Units, Mean Length of Clauses, Transactional.

Finally, it would appear from the regression analysis that the contribution of paragraph and story grammar variables to T-Unit variables and vice versa is not at all clear. Paragraph and story grammar variables appear to contribute little to T-Unit variable scores in the Intact Picture, Story Task and Serial Picture, Description Task conditions. However, in the other two conditions, Story Grammar scores contribute to T-Unit variables in a consistent manner--good story grammar scores contribute to T-Unit variables in the Intact Picture, Description Task, poor story grammar scores contribute to T-Unit variables in the Intact Picture, Description Task condition. However, the contribution of T-Unit variables to Paragraph and Story Grammar variables shows no discernible pattern, despite there being some strong contributions in particular instances

(e.g. Number of T-Units contributing to Good Story Order, in the Serial Picture, Story Task condition).

DISCUSSION

This study addressed the question of whether inductive measures of writing were related to deductive or aprioristic measures. The two inductive measures identified included Primary Trait analysis and T-Unit analysis. The Deductive measures included variables derived from Paragraph and Story Grammars. The value of inductive measures lies in their context sensitivity and universality and ease of scoring; unfortunately, however, these measures typically do not enable one to test theoretically defined constructs. The value of deductive measures, on the other hand, is that they enable one to test competing theories, by relating psycholinguistically defined variables to certain operational outcomes. However, deductive measures tend to be overly simplistic and tend to apply only to a small sample of discourse types. The study's intent, therefore, was to discover the extent to which inductively and deductively derived measures relate to one another.

The basic findings of this study are that, with the exception of Primary Trait, the various indices examined (syntactic maturity, paragraph and story grammars) appear to represent distinct psycholinguistic factors in written discourse, but they do not appear to relate to one another in any consistent manner. Primary Trait analysis appears to draw on several of the inductive and deductive variables, but again, even when some predictions can be made about which variables should contribute to the Primary Trait score, they seem not to do so in any consistent manner. Several reasons suggest themselves. Firstly,

the practice of coalescing the individual trait scores into one holistic score may serve to mask the relationship of the particular traits with inductive and deductive variables. In addition, merging the scores of 15 raters to arrive at a mean Primary Trait score may yield a highly reliable score, but again may serve to camouflage the influence of particular inductive and deductive variables on particular raters' (or groups of like-minded raters) scores.

Secondly, the narrowness of the definitions within paragraph and story grammars does not allow them to account for different types of genre and literary devices. In constructing optimal grammars, psycholinguists have narrowly defined optimal structures and necessary text components. It may be that good writing entails the use of literary devices which specifically violate these optimal structures and components but which represent natural characteristics of genre types that influence a rater's judgement. It is clear from this study that neither descriptive nor explanatory grammars are yet adequate to explain the psycholinguistic bases of raters' judgements. These findings suggest that the next logical step should be a dialectic between the two approaches discussed in this paper, rather than continued development of either approach without regard for the other.

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TABLE 1

Means and Standard Deviations of Quality Indices by the Picture and Task Conditions.

	LENGTH (IN T-UNITS)	MEAN LENGTH OF T-UNITS	MEAN LENGTH OF CLAUSES	MEAN NUMBER OF CLAUSES PER T-UNIT	PRIMARY TRAIT SCORE
Intact Picture-Story Task	19.13	10.83	6.38	2.84	5.10
S.D.	9.21	2.73	3.20	1.63	1.31
Intact Picture-Description Task	8.4	13.42	7.04	4.24	4.57
S.D.	3.72	5.30	3.74	4.09	2.29
Serial Picture-Story Task	18.4	10.70	6.05	3.56	4.91
S.D.	8.31	1.69	3.05	2.20	1.71
Serial Picture Description Task	13.67	12.08	5.93	4.48	4.61
S.D.	9.78	4.17	2.75	4.02	3.04

TABLE 1 (continued)

Means and Standard Deviations of Quality Indices by the Picture and Task Conditions.

	TRANSACTIONAL	POETIC	RECORD/REPORT	SPECULATIVE	NECESSARY COMPONENTS	INSUFFICIENT COMPONENTS	COHESION INDEX	GOOD STORY ORDER	POOR STORY ORDER
Intact Picture-Story Task	0.00	96.7	3.3	0.00	63.3	33.3	0.10	66.7	16.67
S.D.	.00	18.26	18.26	0	49.01	47.95	.30	47.95	37.90
Intact Picture-Description Task	73.3	26.7	63.3	3.3	0.00	26.7	37.5	0.00	26.7
S.D.	44.98	44.98	49.01	18.26		44.98	33.98	0.0	44.97
Serial Picture-Story Task	6.7	93.3	3.3	3.3	43.3	50.0	1.43	83.3	10.00
S.D.	25.37	25.37	18.26	18.26	50.40	50.85	6.24	37.90	30.50
Serial Picture-Description Task	66.7	33.3	33.3	33.3	6.7	26.7	35.87	6.7	26.7
S.D.	47.95	47.95	47.95	47.95	25.37	44.98	36.63	25.37	44.97

TABLE 2
Correlation Matrix for T-Unit, Primary Trait, Paragraph and Story Grammar Variables
Intact Picture, Story Task Condition

	LENGTH	MWT	MWC	MCT	PT	POETIC	REC/REP	NEC COMP	COHESION	GOOD STORY ORDER
	1	2	3	4	5	6	7	8	9	10
1	1.000									
2	-.717	1.000								
3	-.326	.679	1.000							
4	.585	-.170	.130	1.000						
5	-.055	.276	.298	.047	1.000					
6	.167	-.126	.058	.075	.212	1.000				
7	-.167	.126	-.058	-.075	-.212	-1.000	1.000			
8	.164	.017	.220	-.035	.238	.244	-.244	1.000		
9	-.238	.053	-.062	-.098	.229	.062	-.062	.023	1.000	
10	.267	.030	.128	.262	.137	.284	-.284	.257	-.509	1.000

TABLE 2 (continued)
Correlation Matrix for T-Unit, Primary Trait, Paragraph and Story Grammar Variables
Intact Picture, Description Task

	LENGTH	MWT	MWC	MCT	PT	POETIC	REC/REP	NEC COMP	COHESION	GOOD STORY ORDER
	1	2	3	4	5	6	7	8	9	10
1	1.000									
2	-.439	1.000								
3	-.186	.336	1.000							
4	.529	-.281	.124	1.000						
5	.512	.238	.068	.390	1.000					
6	-.234	-.195	.118	-.035	-.250	1.000				
7	.167	.166	.071	.159	.259	-.793	1.000			
8	.112	.069	-.207	-.156	.150	-.112	-.244	1.000		
9	-.056	.115	-.012	-.010	-.204	-.677	.534	-.042	1.000	
10	-.361	-.418	-.302	-.146	-.344	.308	-.244	-.034	-.209	1.000

TABLE 2 (continued)
Corelation Matrix for T-Unit, Primary Trait, Paragraph and Story Grammar Variables
Serial Picture, Story Task

	LENGTH	MWT	MWC	MCT	PT	POETIC	REC/REP	NEC. COMP	COHESION	GOOD STORY ORDER
	1	2	3	4	5	6	7	8	9	10
1	1.000									
2	-.421	1.000								
3	-.203	.102	1.000							
4	.233	-.262	.441	1.000						
5	.523	-.019	.104	.026	1.000					
6	.373	-.214	.094	-.086	.512	1.000				
7	-.350	.294	-.065	-.048	-.308	-.695	1.000			
8	.492	-.359	.123	.489	.481	.234	-.162	1.000		
9	-.387	.285	-.082	.003	-.416	-.875	.956	-.204	1.000	
10	.099	-.162	.168	.023	.166	.598	-.415	.030	-.523	1.000

TABLE 2 (Continued)
Correlation Matrix for T-Unit, Primary Trait, Paragraph and Story Grammar Variables
Serial Picture, Description Task

	LENGTH	MWT	MWC	MCT	PT	POETIC	REC/	NEC COMP	COHESION	GOOD STORY ORDER
	1	2	3	4	5	6	7	8	9	10
1	1.000									
2	-.351	1.000								
3	-.005	.471	1.000							
4	.586	-.349	.055	1.000						
5	.495	-.105	.010	.436	1.000					
6	.400	-.153	-.105	.070	-.214	1.000				
7	-.159	-.192	-.122	.156	.385	-.500	1.000			
8	.162	.105	.007	-.089	-.065	.378	-.189	1.000		
9	-.318	-.034	.021	-.132	.063	-.704	.354	-.266	1.000	
10	.440	-.140	-.015	-.082	-.016	.378	-.189	.464	-.266	1.000

TABLE 3

Rotated Factor Matrix and Standardized Regression Coefficients for Intact Picture, Story Task

		FACTOR				REGRESSION
		I	II	III	IV	PT
Length	1	-.176	.733	-.403	.156	.003
MWT	2	-.028	-.395	.753	-.123	.125
MWC	3	-.124	-.046	.778	.039	.196
MCT	4	-.123	.740	.077	-.009	.143
PT	5	.246	.177	.528	.293	.000
POETIC	6	-.033	.038	-.019	.881	.078
REC/REP	7	.033	-.038	.019	-.881	-.078
NEC COMP	8	-.062	.167	.259	.379	.131
COHESION	9	.786	-.067	.067	.096	.193
GOOD STORY ORDER	10	-.646	.249	.167	.306	-.018
Intact Picture, Description Task						
LENGTH	1	.114	.828	-.151	.146	.297
MWT	2	.135	-.295	.773	.120	.116
MWC	3	-.127	-.013	.599	-.442	.076
MCT	4	-.000	.718	-.056	-.297	.195
PT	5	.054	.653	.387	.232	.000
POETIC	6	-.900	-.145	-.118	-.166	.049
REC/REP	7	.798	.186	.155	-.188	.007
NEC COMP	8	-.044	.014	.032	.798	.183
COHESION	9	.779	-.160	.003	-.095	-.146
GOOD STORY ORDER	10	-.227	-.339	-.609	-.050	-.291

TABLE 3 (continued)
Rotated Factor Matrix and Standardized Regression Coefficients for
Serial Picture, Story Instructions

		FACTOR				REGRESSION
		I	II	III	IV	PT
LENGTH	1	-.169	.732	-.232	-.012	.203
MWT	2	.284	-.595	-.185	.026	-.010
MWC	3	-.085	-.114	-.099	.784	-.022
MCT	4	.057	.414	.193	.689	.008
PT	5	-.128	.435	-.617	.043	.000
POETIC	6	-.725	.170	-.595	-.008	.127
REC/REP	7	.851	-.276	-.002	-.001	.082
NEC COMP	8	.047	.717	-.240	.295	.230
COHESION	9	.868	-.255	.241	.003	.004
GOCD STORY ORDER	10	-.613	-.102	-.313	.180	-.014

Serial Picture, Description Instructions

LENGTH	1	-.305	.745	-.071	.245	.279
MWT	2	.057	-.309	.661	.091	-.035
MWC	3	.026	.116	.670	.067	.144
MCT	4	-.053	.760	-.137	-.106	.295
PT	5	.356	.682	.003	.062	.000
POETIC	6	-.752	.059	-.250	.455	-.123
REC/REP	7	.763	.152	-.360	.038	.205
NEC COMP	8	-.155	-.074	.096	.684	.022
COHESION	9	.613	-.128	.096	-.376	.052
GOOD STORY ORDER	10	-.215	.104	.007	.607	.068